

## CS 1301 Study Questions

These are sample test problems. (Most actual test problems will be just a bit easier). To learn the most, solve these problems using only a pencil or pen and a piece of blank paper. Once you think you have them solved, move to a computer and see if you were right. If not, learn from your mistakes!

Write Code ( 8 points)

Write a function **showPic()** which prompts the user to pick a picture using the *pickAFile()* file chooser, and then displays it. If the user picks a file that does not end in “.jpg” or “.jpeg” the showPic() function should keep prompting the user to pick a file until they pick a valid jpeg image. Remember, in myro the *pickAFile()* function returns a filename as a string, the *loadPicture(filename)* function loads a picture, and the *show(p)* function displays a picture.

```
from myro import *
```

```
def showPic():
```

```
    fileName = pickAFile()
```

```
    print fileName[-4:]
```

```
    if (fileName[-5:] != '.jpeg') and (fileName[-4:] != '.jpg'):
```

```
        print "Not a JPEG image, try again!"
```

```
        showPic()
```

```
    else:
```

```
        p = loadPicture(fileName)
```

```
        show(p)
```

Write Code (15 points)

Write a function **isPalindrome( aString)** that takes a string as a parameter and returns a boolean value. The function should return True if the string parameter is a palindrome (i.e. when read backwards, it is the same, like "racecar", or "AManAPlanACAnalPAnaMA") and False otherwise.

```
def isPalindrome( aString):
```

```
    #Reverse the string the easy way
```

```
    #revString = aString[::-1]
```

```
    #You could also reverse the string the hard way...
```

```
    revString = ""
```

```
    for i in range(0,len(aString)):
```

```
        revString = aString[i] + revString
```

```
    return ( revString == aString)
```

Write Code ( 10 points)

Write your own version of the **getPixels( picture )** function. It will return a list containing all of the pixels in a picture. You may NOT use the built in getPixels function, but you can use the getWidth(picture), getHeight(picture), and getPixel(picture, x,y) functions.

```
def getPixels(picture):  
    pixelList = []  
    for x in range(0, getWidth(picture)):  
        for y in range(0,getHeight(picture)):  
            pix = getPixel(picture,x,y)  
            pixelList.append(pix)  
  
    return(pixelList)
```

**Namespaces (8 points):**

Review the following code:

```
aVariable = 8  
myVariable = 15  
  
def function1(i,q):  
    global aVariable  
    myVariable = 20  
  
    print i + aVariable  
    aVariable = i+q  
    return q + myVariable
```

```
Answer = function1(aVariable, myVariable)
```

5a. After the function call (at the end of the code) what is the value of:

Answer = 35  
aVariable = 23

5b. What is printed to the screen when this code runs? 16

5c. Which variable or variables are "overshadowed" when execution is inside of function1? myVariable

Write Code:

Write a function **removeStrings( aList)** that will take the aList parameter and return a copy with all elements that are of type 'str' removed using the filter(function,list) function. You may write a helper function, or use a lambda expression. For example, removeStrings( ['test', 3, 4, 'hi']) would return [3,4].

```
def removeStrings(aList):
```

```
    result = filter(lambda x: type(x) != type(""), aList)
```

```
    return(result)
```